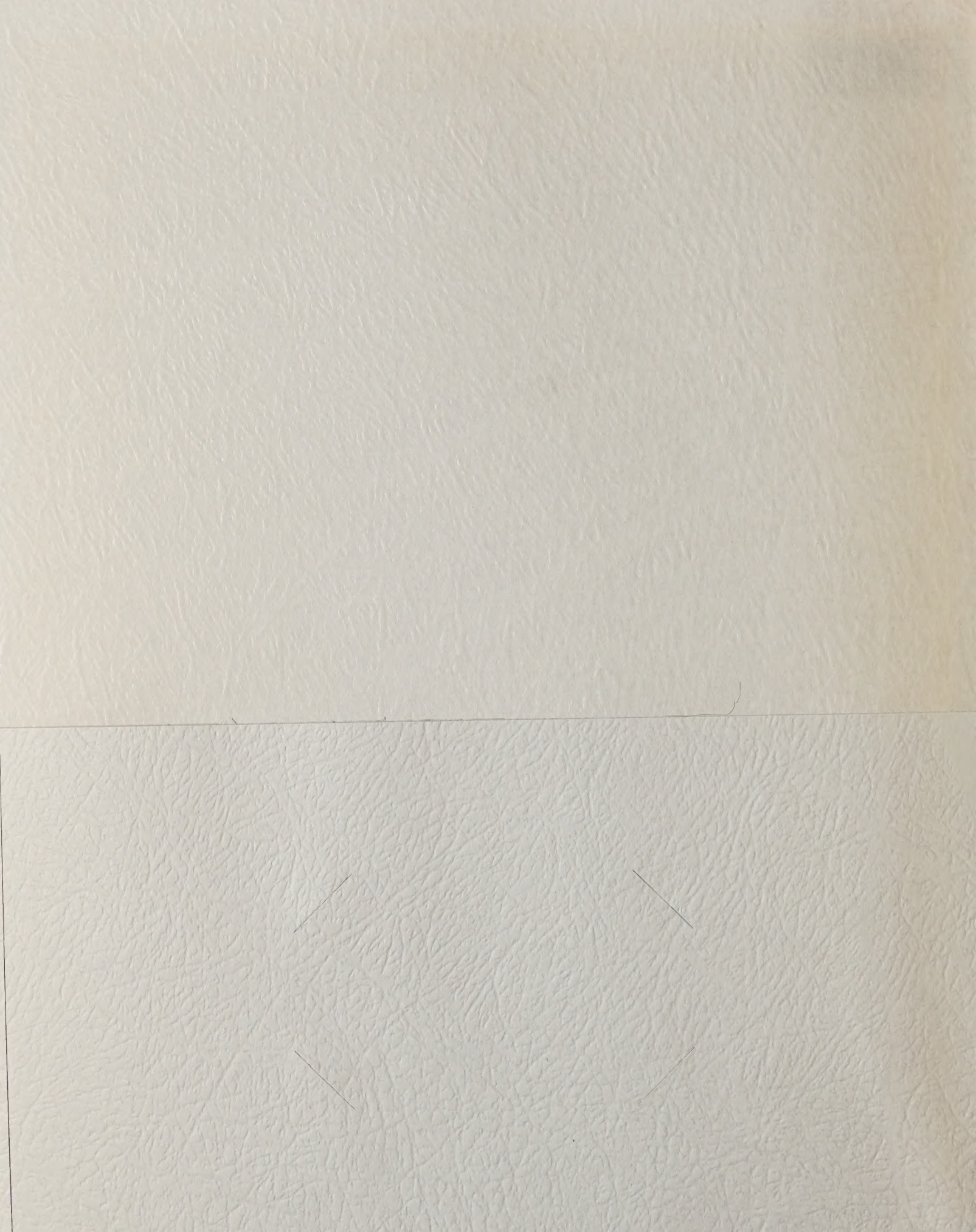


Rondeau Provincial Park

Information on the Issues - 1991

WHITE-TAILED DEER:
The threat to Rondeau's forests

Present-day visitors to Rondeau should be thankful for the foresight shown by the people and Government of Ontario in 1894 when they recognized the need to set aside this peninsula as a provincial park. Only the second provincial park in Ontario at the time, Rondeau continues to provide splendid recreational opportunities for the public and has become widely known for its distinctive, unique Carolinian forest ecosystem.

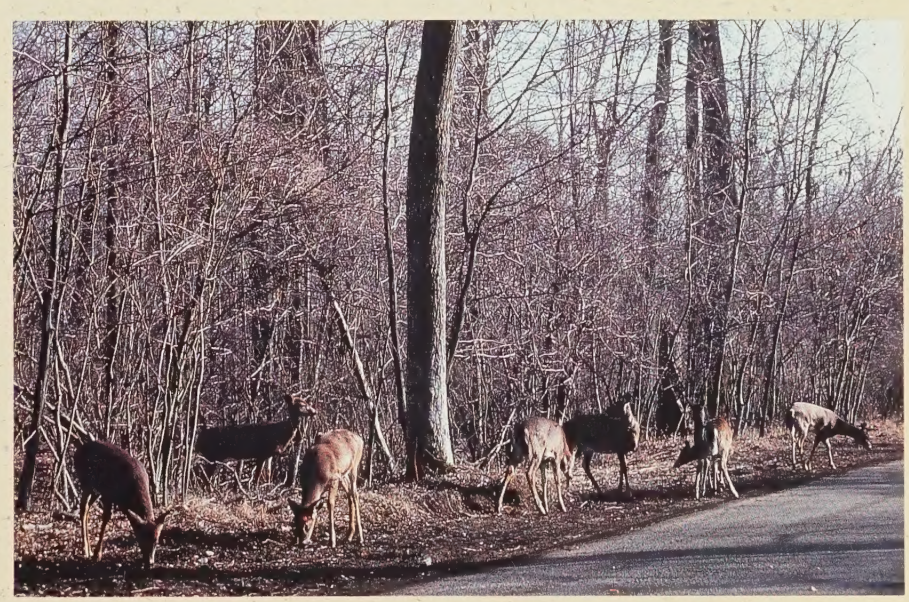
By the late 1800s, settlement and the clearing of the surrounding forested area for farmland resulted in Rondeau Provincial Park being left as the largest remaining representation of Carolinian forest in Canada.

In the early 1900s, there were virtually no whitetailed deer on the Rondeau peninsula. For visitor viewing, five deer were brought to the park and kept in a zoo-like enclosure. They eventually escaped. With few natural predators left to threaten them, the animals multiplied quickly. By 1911, the herd was estimated at over 200 animals. At that time, park staff began reporting damage to the park's natural vegetation because of deer browsing. Browsing of white pine seedlings was particularly severe.

Deer are very selective in their eating habits and tend to choose the tender young shoots of Carolinian trees and plants. During summer, one deer can eat 3-4 kilograms of plant material per day.

Scientists have estimated that Rondeau's ecosystem can only sustain a deer population of 100 to 125 animals before regeneration of the vegetation is severely affected. This number would allow the forest to renew and maintain a balanced ecosystem with only 35 to 40% of the annual growth of woody plants consumed.

Continued on next page



Ministry of Natural Resources
Ontario

The forest threat, cont'd

Since 1911, the herd has ranged from less than 100 to 600 deer. To help control its negative impact on the park's vegetation, the deer population was annually reduced through government culls conducted between 1912 and 1973.

Since 1974, no deer have been removed from the park. A deer count in January 1991 found 593 animals. This large number has created a tremendous imbalance in the forest ecosystem.

For the last 40 years, the Ministry of Natural Resources has been studying the effects of deer on the park's ecosystem. Nearly all reports have indicated that the Carolinian vegetation is being severely altered by the high number of deer. Repeatedly, specialists have recommended a significant reduction in the herd.

Many options to reduce the herd have been considered. It is hoped that eventually a non-lethal technology, such as birth control, can be introduced to maintain the population at the recommended level. However, as this booklet explains, for the present a ministry-conducted cull will be required until a non-lethal technique is available. The cull is expected to be undertaken in late 1991 or early 1992.

The goal of the Ministry of Natural Resources for Rondeau is to protect and enhance the quality of the park environment, especially its unique Carolinian features. This will involve reducing the deer herd to an ecologically appropriate number. The following articles and information will discuss the important issues at stake and the work and study that has led to the decisions on the future of deer management in the park.

What makes Rondeau Park so special?

The warm climate and southerly location allow plants and animals to exist here which are normally found only in the northeastern United States. As a result, naturalists describe Rondeau as having a "Carolinian" forest. Studies have found that 40% of Canada's rare, threatened and endangered species exist in the Carolinian Life Zone found south of a line running from Grand Bend, on Lake Huron, to Toronto, on Lake Ontario.

Rondeau as it should be

If a picture is worth a thousand words then these photos should tell the whole story. In 1978, two deer exclosures were set up within the park's forests. No deer have been allowed into these areas since that time.

As can be seen, the growth within the exclosures has been remarkable. With the absence of browsing deer, tree species such as tulip tree, red oak, black oak, sassafras and black cherry grow in abundance. The forest floor is also lush with flowers and shrubs.

Outside the exclosure, the browse line is obvious. Ground vegetation is sparse with mostly tough grasses, raspberry and barberry bushes left to protect the sandy soil. Tree species that deer do not favour such as hop hornbeam and spicebush are growing, but even these are now being browsed due to the scarcity of preferred vegetation.

If the change in the forest continues at its present rate, Rondeau will no longer remain a Carolinian ecosystem with its many significant species. It will evolve into a habitat dominated by plant species which are generally unpalatable to deer.

(Above) **Inside the exclosure -**

Rondeau as it could be with a smaller deer herd. After various studies, scientists agree that browsing of Carolinian-type seedlings by white-tailed deer is severely altering the natural composition of Rondeau's forest.

(Below) **Outside the exclosure -**

The results of heavy browsing on Rondeau's forest.

Answers to your questions

Q The Rondeau Park Management Plan, released in February 1991, indicates that only 100-125 deer can be resident in Rondeau if the Carolinian forest ecosystem is to return to its vitality. How important is it that the herd not exceed this number?

A Very important. Considerable recent research has gone into arriving at this number. With a herd of about 125 animals, it is estimated that 35-40% of the current annual growth of woody vegetation would still be consumed. This should allow for adequate forest regeneration.

Although 125 is the maximum number of deer recommended at the end of winter, there would actually be more than this number in the "viewing season" because of the birth of new fawns.

Q Is the presence of deer the only factor that affects the growth of Carolinian vegetation?

A Rondeau's forest is affected by a large number of variables including deer browsing, soil type, water table, climate, weather, insects and disease. However, studies conducted utilizing two deer exclosures within the park indicate that no matter how the various factors combine and interact to affect the forest, the presence of deer is dominant in regulating and controlling forest growth and development once regeneration has taken place. By reducing the population, the deer's dominance over the regeneration process will be lessened and other factors that normally influence regeneration will be allowed to take effect.

Q Why has the Ministry of Natural Resources done nothing to control deer numbers since 1974? Has this delay not been the main cause of the severe damage present now?

A Seven deer were removed from the park during the winter of 1974 in a tranquilizing and relocation project undertaken by the Ontario Humane Society and the University of Guelph. Since then, nothing has been done to control deer numbers because public outcry caused the ministry to suspend culling and it was decided in 1974 to establish a public Advisory Committee to deliberate Rondeau's future.

From 1974 to 1977, the deer herds and Carolinian vegetation were monitored and the committee continued to search for an answer to Rondeau's forest/deer problem. In 1978, two deer exclosures were established and subsequently studied for the next five years.

By 1983, the exclosure study made it clear there were too many deer in the park if Rondeau's ecosystem were to survive. The next step was to determine how many deer there should be. In 1989, a paper summarized that 100-125 was the maximum number that should be allowed to remain. At this point, the public was again given the opportunity to comment on a preliminary management plan.

The 1991 Rondeau Park Management Plan is the final result of years of study on the park's future, including the deer management issue.

Q After the deer population is reduced to the required number, how long will it be until the vegetation in the park returns to normal?

A Considering the present deterioration of the forest and the continuing presence of deer, the recovery process will be gradual and may take several decades. Some of the ground flora and wildflowers may return within a few years to selected locations.

Tree seedlings should be more numerous within a couple of years, but it will take much longer for these to become saplings. The effects of the severe degradation of the forest will continue to be seen in Rondeau for several decades. Monitoring programs are in place to determine the rate of recovery and to advise whether further herd reduction is necessary to enhance the recovery process.

Q What was the deer telemetry study and what did it prove?

A In the winters of 1986 and 1987, 38 Rondeau deer were fitted with radio collars and Ministry staff tracked the animals' movements. The results of the study suggested that the Rondeau herd is basically resident in the park although some deer make short excursions to neighbouring rural areas. No large scale migration of deer appears to take place.

Q When will the cull take place?

A The cull will commence in late 1991 or in early 1992.

Q What will happen to the deer meat after the cull?

A Of the animals culled, approximately 40 carcasses will be used for research. Body condition and fat measurements will be analyzed at the University of Guelph.

Of the remaining deer, 50% will go to charitable organizations and 50% will be distributed among the four Indian First Nations located in Kent and Lambton counties. In both cases, the meat will be properly inspected. Antlers and hides may be used for native crafts.

Q What is the status of Lyme disease in Rondeau?

A To date, on-site research at Rondeau has failed to find the major tick that is known to be involved in the transmission of the disease. However, there is serologic evidence in small

mammals and deer that suggest the agent for Lyme disease may be present in the park. Blood samples taken from Rondeau deer in 1986 and 1987 showed that 30% of those tested were found to have a Lyme disease-like antibody present in their systems.

It is important to note that Lyme disease cannot be transmitted by eating cooked deer meat.

Pictures of Rondeau Provincial Park through time.

A sycamore tree as would be found in Rondeau in 1906.

In the 1950's, deer were enclosed for easier viewing by visitors.

A summer view of today's Rondeau forest with the clear browse line.

The results of deer browse on a young sapling.

History of white-tailed deer in Rondeau Park

1881-89
No record of deer observed in park during this time.

1891

1899
Five deer introduced to park to be kept in a zoo-like enclosure for viewing by visitors.

1901
Deer escaped from exclosure.

1901

1905
Deer numbers increased from 5 to 70 animals.

1910
Deer herd estimated at 150 animals. Park superintendent and naturalists noticed changes in the forest and begin to trace cause to deer browse.

1911

1912
Deer herd estimated at 200-500 animals. Expert deer hunters hired to reduce numbers. Shot 90 animals and sold venison for $80.00.

1917
Approximately 200 deer shot. 183 carcasses sold for $160.00

1920
Deer damage to trees reported to still be a problem. Population estimated to be 400.

1921

1922
Public strongly supported deer thinning program. Organized shoot killed 150 deer. Venison sold for $160.00.

1928
Study carried out by Superintendent concluded that deer were damaging forest.

1931

1935
Population estimated at 500-600 deer. Organized hunt killed 99 deer.

1936-40
Approximately 450 deer shot in five years. Large increase in number of seedlings and solid regeneration noted afterward.

1941

1951

1952
101 deer shot. Department of Lands and Forests' biologist, Charles Bartlett, begins government study to investigate forest/deer relationship in park.

1958
Bartlett's study concludes deer are the primary reason for the change in forest composition and recommended a significant reduction in the herd.

1959
69 deer shot. Deer population estimated at 100-200 . Public concern expressed over deer hunting in park. Most acessible vegetation had been eaten by deer.

1961

1971

1973
40 deer shot by MNR staff. 343 deer counted. Park vegetation judged overbrowsed.

1974
Ontario Humane Society & University of Guelph agreed to tranquilize and remove 150 deer from park. Project failed. After 650 man-hours, only seven deer removed. Rondeau Advisory Committee began deliberations and public hearings.

1978
Deer exclosure study began.

1981

1983
Exclosure study completed. Results indicated tulip trees outside of exclosure showed very little growth & hard maples were being stunted.

1989
Deer drive counted 489 deer. Preliminary Management Plan reviewed by public.

1991

1991
Rondeau Park Management Plan completed. Decision made to cull deer in 1991 or 1992. Deer herd will be reduced to 100-125. Population will eventually be maintained by a non-lethal technology such as birth control. Present deer count is 593.

FUTURE
Deer population reduced by culls. Research into herd control by birth inhibitor technology underway.

N.B. All population control efforts listed were directly carried out by MNR staff, its departmental predecessors, or by individual marksmen hired specifically for this purpose.

Many options considered for deer popul

In order to reduce deer numbers to a level which would allow for renewal of the forest's ecosystem, twelve deer management options were considered during the formulation of the Rondeau Preliminary Management Plan in 1989.

The following summarizes each of the twelve options and explains why or why not they were found to be feasible and effective.

1 Ministry-conducted Cull - This involves Ministry of Natural Resources staff shooting a specified number of deer. The results would be carefully monitored and the deer population maintained at a suitable size for the forest. Because the deer population has reached 593, shooting is the only way to quickly reduce numbers.

2 Birth Control - This option would limit the ability of the does to reproduce. A form of birth control might help to maintain a population after it has been reduced, but could not work fast enough on its own to bring deer numbers down in time to save the forest. Research is still continuing for this control method. The technology to apply birth control in the field does not currently exist.

3 Capture and Relocation - This option involves the live capture of deer by darting them with an immobilizing agent, using box traps or driving them into corrals. Once captured, the deer would be transported to a release site. Studies show it is extremely difficult to capture a large number of free-ranging deer. Results also indicate that moving white-tailed deer is very stressful to them and often leads to injuries or death for up to 26% of animals transported. Once relocated, the deer suffer significantly higher mortality rates than resident populations. Also, although the results are inconclusive, deer at Rondeau have tested positive for Lyme Disease. It would not be prudent to move any deer from the park without further study on how such action might spread the disease.

4 Controlled Public Hunt - With this option, a season for hunting deer would be established within the park. The Ontario government policy for provincial parks prohibits recreational hunting within nature reserve zones. The expansion of sport hunting in provincial parks does not meet with wide public support.

5 Ministry Cull With Public Participation - Much like the Ministry-conducted cull described previously, this option would include specially trained public marksmen. More training and supervision would be needed than if the ministry worked alone. The selection of the public marksmen would also be a challenge.

6 Introduction of Natural Predators - Natural deer predators such as timber wolves, eastern cougars and black bears would be introduced to the park to

The goal for deer management is to reduce numbers to 100-125 deer in winter.

ation management

possibly decrease deer numbers. It is doubtful that a sufficient number of natural predators could be kept in the park long enough to make a significant impact on the deer population. Park users, local residents and cottagers would be likely to object strongly to the release of such animals near public living areas. Coyotes present in the park have not been able to reduce the herd.

7 Scientific Collection of Deer - This technique would take deer both alive and dead and use them for research. This plan would not be effective because the ministry has no need for research on a large number of deer.

8 Increased Hunting Outside the Park - Recent studies show that the deer in Rondeau are basically a resident population which remain in the park year round. Increased hunting outside of the park would have little effect on the problems within Rondeau.

9 Deer Feeding Programs - With this option, feed would be distributed to supplement the deer's normal diet. There is no evidence to suggest that such an expensive feeding program would be successful in reducing browsing pressure on Carolinian vegetation to the point where the ecosystem could be sustained. Also, deer prefer to eat green plants and flowers in summer rather than artificial feed. Feeding might even add to the problem by decreasing natural deer mortality.

10 Fencing - This option considers fencing off certain areas of the park and keeping deer out until the vegetation inside could renew itself. Unfortunately, as soon as the fences were removed, the ground flora would be quickly eaten again. Deer-proof gates would have to be installed for public use. Deer would have an even greater impact on areas not fenced.

11 Forest Management - This includes planting programs to encourage the re-establishment of Carolinian species and the spraying of animal repellants on existing vegetation. Additional planting would simply provide a greater abundance of browse for the deer and a corresponding increase in population would occur. Animal repellants might be ecologically damaging and would be ineffective over such a large area.

12 Do Nothing - This approach, which has been done in Rondeau since 1974, simply allows the deer herd to fluctuate. Since that time, the deer population has never dropped to the point where the forest was not severely threatened. If the Do Nothing option continues, Rondeau will likely lose much of its Carolinian flora and fauna including rare and endangered species.

Because of fawn births, deer populations will be higher in summer than the recommended winter number.

BIRTH INHIBITORS:

The future of deer population control

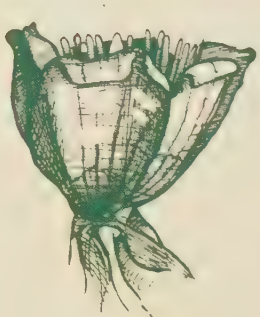
Although ministry culls will reduce the number of deer in Rondeau Park, the population will eventually be maintained, at 100 - 125 animals, with non-lethal technology. Current research finds that reproductive control may be the key to managing the population.

The Ministry of Natural Resources helps support the research of Dr. John W. Turner of the Medical College of Ohio in Toledo. Dr. Turner and his colleagues have been working on immunocontraception research for several years and appear to have the most advanced findings at this time.

Dr. Turner has developed a birth control vaccine that has been used successfully on penned deer using three inoculations. He is now refining the vaccine so it will work in only two inoculations. As research continues, plans are to develop the vaccine to a time-released single inoculation.

While the vaccine is being developed, Ministry of Natural Resources scientists are concentrating on developing an effective system for remote delivery of the vaccine to free-ranging deer. Remote delivery research would involve experimenting and field testing with new dart guns and ways to mark which deer had been treated.

It is hoped that some type of birth control system will eventually be ready for introduction to Rondeau. As with any new technology, the path to success can be slow. If the birth inhibitor is not ready for full use within the next few years, then it may at least be available for initial site testing within that time.



"One of the most challenging issues in Rondeau is the need to protect the park's significant Carolinian vegetation from further damage by the large deer herd. I have committed the ministry to managing the herd by a non-lethal method whenever such technology becomes feasible. At present, the most promising non-lethal option is a birth control method which is now being researched. Culling, however, will be required in Rondeau to reduce the herd to an acceptable level in the near term."

Bud Wildman,
Natural Resources Minister

Vegetation and fauna at risk

As the white-tailed deer eat their way through Rondeau's forests, more than trees are at risk of being deleted from the ecosystem. As in most ecosystems, it is vegetation that predominantly creates the habitat for particular species of birds, mammals, reptiles, amphibians, fish and insects. When this habitat is disrupted the affected wildlife either die out or move away from an area and may never be seen there again.

In a recent study conducted by a University of Toronto researcher, a marked scarcity of seedlings of several tree species, including many of Carolinian variety, were observed. This study predicted that trees such as sassafras, white pine, black cherry, red oak and shagbark hickory could eventually be eliminated from the forests because of excessive browsing by deer.

Another Ministry of Natural Resources study done in Rondeau Park has indicated that because tree seedlings of many species are browsed before they become saplings, it is possible that as older trees die and fall replacements will not be available. Repeated occurrences of this could cause the composition of the forest to be drastically altered.

Many visitors have noticed there has been an alarming reduction in the number and condition of spring wildflowers. After barely surviving the winter on a diet of dry twigs and buds, deer relish the fresh, succulent greenery of emerging spring flora. This is why, instead of the impressive array of healthy trilliums, mayapple and jack-in-the-pulpit normally found covering the forest floor in spring, only a few diminutive, non-flowering remnant spring ephemerals are found. At present, the only location to observe spring wildflowers in the relative abundance that Rondeau is known for are in two small, fenced exclosures where deer browsing has been eliminated since 1978.

Continued on next page

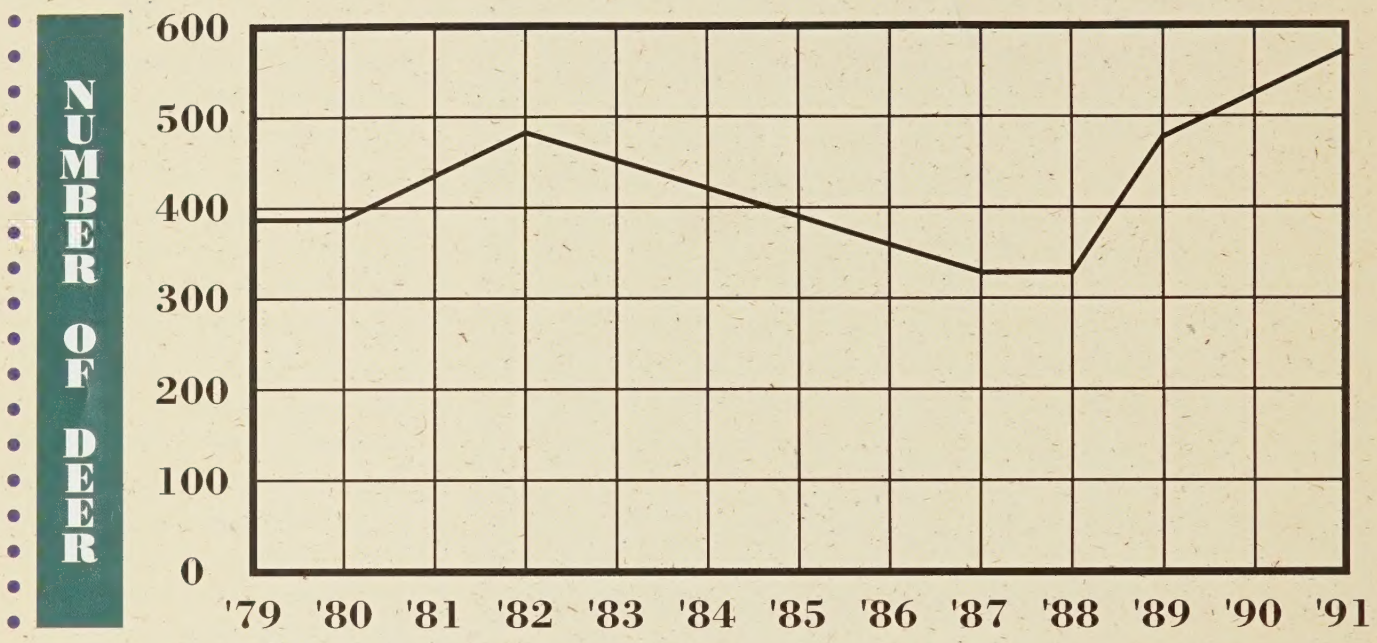
Species being browsed to extinction in Rondeau Park

Tulip leaves and flowers

Prothonotary warbler

Nodding pogonia

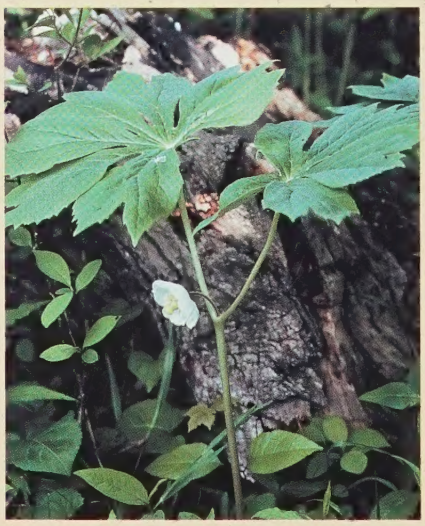
Rondeau deer counts 1979-91



Vegetation and fauna at risk, cont'd

Along with the trilliums, the deer are also affecting many wildflowers which are already rare in Canada. The nodding pogonia is an orchid found in only one location in Canada other than Rondeau. Under normal circumstances, with a healthy ground flora, this small species would be seldom browsed. However, as deer continue to browse and thin the vegetation of their regular diet, they are now beginning to feed on the pogonia.

In addition to direct browsing, the deer have eliminated much of the plant growth which help to maintain ground moisture. As the soil dries, the habitat of certain rare species, like the pogonia, can be negatively affected.



Certain animals and birds also depend on Rondeau's natural habitat for survival. This is one of the few places in Canada where the Acadian flycatcher or prothonotary warbler can be found.

It is safe to say that no other region in Canada has more species in jeopardy than the Carolinian Life Zone. And Rondeau Park is right in the middle of it!

4651
(5K.P.R.91.05.10)
ISBN 0-7729-8483-2

PRINTED ON RECYCLED PAPER